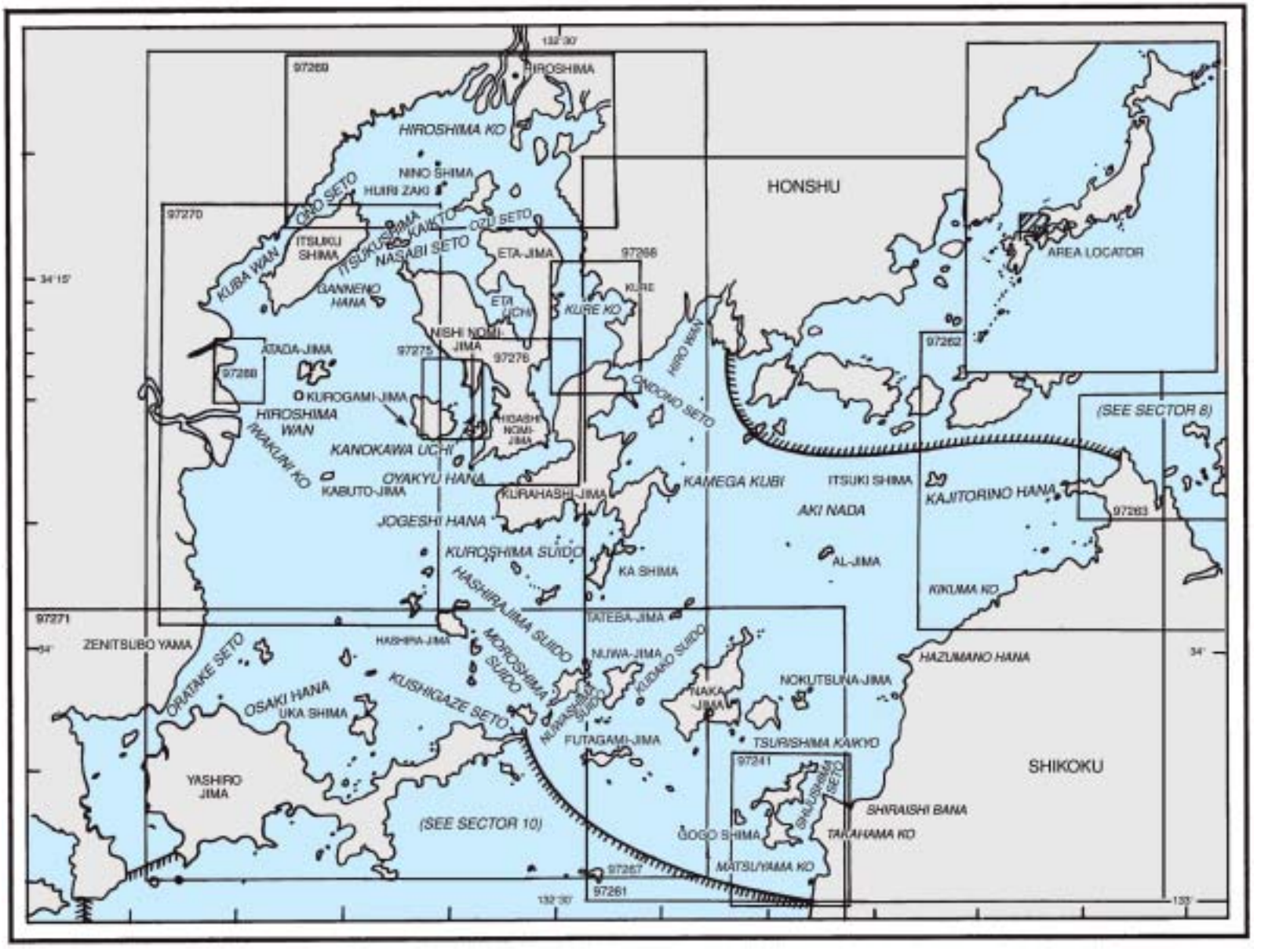
Click on "See Sector" to be hotlinked to that Sector.



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR **9** — CHART INFORMATION

Table of Contents

Table of Contents

SECTOR 9

AKI NADA, TSURUSHIMA KAIKYO, AND HIROSHIMA WAN

Plan.—This sector describes, from E to W, the E and SE side of Aki Nada, from the vicinity of Kajitorino Hana on the mainland of Shikoku, SW to Matsuyama Ko, including the offlying islands and dangers. The sector continues W to Obatake Seto, with a description of the islands and islets S of Hashirajima Suido and then trends N along the coast to Hiroshima Ko, including Hiroshima Wan, Itsukushima Kaikyo, and Ono Seto. The sector concludes by going S to Hiro Wan, including the adjacent islands and straits.

General Remarks

9.1 Aki Nada lies W of Hiuchi Nada, NE of Iyo Nada, and E of Hiroshima Wan. The main routes shown on the charts lead SW through Aki Nada, from Kurushima Kaikyo to Tsurushima Kaikyo, the widest of several channels between Aki Nada and Iyo Nada.

Hiroshima Wan is the largest bay and lies W of Aki Nada and N of Iyo Nada. Hiroshima Ko and Kure Ko, at the head of the bay, are large important harbors. The port of Iwakuni Ko lies on the W side of Hiroshima Wan.

Tides—Currents.—In Aki Nada, in the area between the W entrance off Kurushima Kaikyo and the N entrance of Tsurishima Kaikyo, the tidal current has a tendency to set N during the flood tide and S during the ebb. At night or in thick weather, caution is necessary.

Between the vicinity of the W entrance of Kurushima Kaikyo and the vicinity of the islands of Ai-jima and Ko-Ai-jima, the flood tidal current sets NE from about 2 hours after LW by the shore until about 2 hours after HW. The ebb current sets SW from about 2 hours after HW until about 2 hours after LW. The change is about 30 minutes in advance of that in the W channel of Kurushima Kaikyo. Except close to the shore, the maximum velocity at springs is about 2 knots.

Although a cross-channel set is seldom experienced in Tsurishima Kaikyo, caution is necessary when the tidal current is at its maximum velocity of 3 to 3.5 knots.

In Kudako Suido, the tidal currents attain their greatest velocities of 5 to 6.5 knots in the W and E channels, respectively, of Kudako-jima. It is sometimes difficult or impossible for some vessels to maintain their headings in this area.

Tidal currents in Hiroshima Wan are weak, being about 0.5 knot, and the general set is in a N and S direction. In the narrow passages between the smaller islands, the velocity is about 1 to 2 knots. The direction and velocity vary considerably from day to day.

Aki Nada—East Part—Shikoku Coast

9.2 Between **Kajitorino Hana** (34˚07'N., 132˚54'E.) and Kikuma Ko, about 6 miles to the SW, lies the NW coast of Shikoku, which forms the SE side of Aki Nada. The coast in this area consists of a number of small bays and coves backed by rolling hills and mountains. Most dangers between the two points lie within 1 mile of the coast. Kajitorino Hana is marked by a light and a racon.

A terminal for oil and LPG tankers is situated about 0.7 mile E of Kajitori Hana. A T-head jetty at the center of the terminal can accommodate oil tankers of up to 125,000 dwt, or LPG tankers of up to 67,000 dwt. Berth No. 1, Berth No. 2, and Berth No. 3, to the W of the T-head jetty, can accommodate tankers of between 3,000 and 6,500 dwt. Berth No. 4, Berth No. 5, and Berth No. 6, to the E, can accommodate tankers between 3,500 and 10,000 dwt. Lights are shown from the T-head jetty and from the outermost E and W dolphins. Berthing is carried out in daylight when the current is nearly slack. Two to four tugs are required, depending on the size of vessel.

Obe Wan (34˚06'N., 132˚54'E.) indents the coast to the E, between the projection of which Kajitorino Hana is the extremity and Suwano Hana, a point about 3 miles to the S. The town of Obe stands on the NE shore of the bay. A shoal, with depths of 10.4 to 11m, lies to the middle of the bay.

Anchorage.—Obe Wan is open W, but affords good anchorage, in depths of 11 to 14.6m, mud, with Mi Saki, a point on the N side of the entrance to the bay, bearing 315˚ and Ke Shima, an islet 2.75 miles S of Kajitorino Hana, bearing 225˚.

Itsuki-jima lies 5 miles to the W of Kajitorino Hana and is a good landmark for vessels transiting Aki Nada. Shira Ishi, two prominent rocks, lie about 2.5 miles SW of the summit on Itsuki-jima.

Aji Iwa (34˚04'N., 132˚51'E.), with a depth of 2m, lies 1.5 miles WSW of Ke Shima. The rock is marked by a lighted buoy moored 0.1 mile off its NNE side. A shoal, with a least depth of 5.8m, lies 0.3 mile W of Aji Iwa, and is marked on its SW side by a lighted buoy.

Kikuma Ko (34˚02'N., 132˚50'E.)

World Port Index No. 62060

9.3 Kikuma Ko is a harbor subjected to immigration and harbor regulations; it is located about 4.5 miles SW of Obe Wan. The inner harbor is protected by a breakwater. The town of Kikuma stands on the E side of the harbor.

Winds—Weather.—Throughout the year the wind is generally from the NE and is very strong at times. Small vessels generally seek shelter in the inner part of the harbor during strong NE winds.

Depths—Limitations.—There is a pier in the outer harbor, with depths of 3.5 to 4m alongside. Kikuma Ko Tanker Port is situated about 1.3 miles NE of Kikuma Ko Breakwater. The port consists of a dolphin berth connected to the shore by a jetty and a sea-berth made up of mooring buoys. Depths at the dolphin berth are from 15.5m alongside; depths at the sea-berth are from 20 to 30m. The berths cannot be used during heavy weather. Vessels usually berth on the flood and lie heading SW. The port is capable of handling tankers up to 280m in length and 125,000 dwt.

Table of Contents

A submarine pipeline is laid from the sea-berth SSE to the shore. Reclamation is being carried out SE of the landfall of the pipeline.

Aspect.—There are three tall television towers on a hill ESE of the breakwater that serve as a good mark when entering the harbor. A light is shown from the breakwater.

Numerous tanks and chimneys stand near the oil terminal. At night, the lights of the terminal may be seen for a considerable distance.

Pilotage.—Pilotage is not compulsory, but the Naikai Pilot Service will provide a pilot. The pilot is obtained at the port of Kure Ko.

Anchorage.—Anchorage may be found about 0.3 mile W of the oil sea berth, in depths of 15 to 30m. The holding ground is good, but the current offshore is very strong.

The outer harbor of Kikuma Ko affords anchorage with good holding ground, but it is unsafe in the face of strong NE winds. During winter months, strong NW winds prevail.

9.4 Matsuga Saki (34˚02'N., 132˚50'E.) lies about 0.5 mile SW of the breakwater head at Kikuma Ko. The point is closely fringed by a reef and foul ground.

Senbagazake Hana lies about 1.5 miles SW of Matsuga Saki and appears as a dark and precipitous point. The point is easily distinguished as it is in marked contrast with the other light gray points in the vicinity.

Shiode Iso (34˚01'N., 132˚48'E.), 0.9m high and surrounded by rocks that dry, lies on the extremity of a shallow spit that extends about 0.5 mile N from the shore, and 0.75 mile W of Senbagazake Han. A light is shown from Shiode Iso.

Hazumano Hana is a prominent salient point, about 1.5 miles SW of Shiode Iso. Strong tide rips form close off the point. A light is shown from Hazumano Hana.

Ka Shima (33˚58'N., 132˚46'E.), a round-topped, thickly-wooded islet, lies 1.5 miles S of Hazumano Hana, and 0.25 mile W of the entrance to the port of Hojo Ko. Ko-Ka Shima, a small islet, Gyokurikandori Iwa, a group of rocks, and Chigiri Iwa, a rock, all lie within 0.5 mile WSW of Ka Shima. A light is shown from the head of the breakwater at the NE point of Ka Shima. An overhead cable joins the islet to the coast.

9.5 Hojo Ko (33˚58'N., 132˚46'E.) (World Port Index No. 62050) is a local harbor located about 1.5 miles S of Hazumano Hana. There is a floating jetty at the inner end of the inner harbor, with a depth of 2.4 to 3.1m alongside. The town of Hojo lies E of the harbor. The harbor is protected by a N and S breakwater, and a light is shown from the head of the N breakwater.

Horie Wan is the S part of the bight which lies between Hazumano Hana and Shiraishi Bana. The open bay is exposed to winds from the N and W. The mouth of the Kuma Kawa, which dries, flows into the S side of the bay.

Anchorage.—The bay affords good anchorage, except when the winds are from W to N, in 12.8m, with Tsumuri Zaki, the NE extremity of Gogo Shima, bearing 293˚, distant about 2 miles.

Temporary anchorage, in depths of 11 to 16m, can be taken with Tsumuri Zake bearing 262˚, distant about 2 to 2.75 miles.

Caution.—Care is necessary to avoid the shallow water dangers when entering the bay and the submarine cables near the mouth of the Kuma Gawa.

9.6 Horie Ko (33˚54'N., 132˚45'E.) lies on the SE side of Horie Wan and is protected by an off-lying breakwater showing a light on its SW end. A second breakwater, also showing a light, lies on the E side of the harbor. The depths in the main part of the harbor range from 4 to 7m.

There is a floating jetty in the port, which can berth two vessels of the 1,000 grt class at the inner end.

A light is shown from a white tower on the N breakwater head at Yanigihara, a small harbor 3 miles NNE of Horie Ko.

Takahama Seto (Shijushima Seto)(33˚53'N., 132˚42'E.) is the strait between Gogo Shima and the mainland coast of Shikoku. The N entrance to the strait lies between Ken Saki, the E extremity of Gogo Shima, and Shiraishi Bana, on the mainland. The S entrance lies between Kuro Saki, the SE extremity of Gogo Shima, and Shiju Shima, 1.5 miles S of Shiraishi Bana.

Tides—Currents.—The maximum rate attained is about 2.5 knots, but both the rate and direction of the current vary considerably from time to time due to the diurnal inequality and to wind currents.

Depths—Limitations.—Mid-channel depths are deep in Shijushima Seto, which has a least navigable width of about 0.3 mile at the S entrance between Kuro Saki and Shiju Shima. A 5.2m shoal lies 0.5 mile S of Kuro Saki and is marked on its W side by a lighted buoy.

Matsuyama Ko (33˚51'N., 132˚42'E.)

World Port Index No. 62030

9.7 The port of Matsuyama Ko (Mitsuhama Ko) lies on the E side of the S approach to Shijushima Seto (Takahama Seto) Seto. The small harbors of Nishi-Habu Hakuchi, Takahama Ko, and Matsuyama Kanko Hakuchi, which form part of the port, lie 2.5 miles S, 1.25 miles N, and 2 miles N, respectively, of the main harbor. The main harbor is divided into an inner harbor and an outer harbor. The port has anchorage and berthing facilities for large vessels.

Winds—Weather.—The wind is mostly from the NW and strongest from February to April. The areas within the breakwaters are sheltered from wind and sea. The weather is generally clear, except during June and July, when dense fog may be encountered.

Depths—Limitations.—The outer harbor has six main berths up to 400m long, with depths alongside of 7.4 to 12.4m. Generally, tanker vessels up to 50,000 dwt, 240m in length, and 12m draft can be handled alongside. Cargo vessels of 26,500 dwt, 170m in length, and 10.3m draft can be accommodated. The inner harbor has depths of 4m.

Pilotage.—Naikai Pilot Service provides pilots for the port through the pilot station at Kure. Pilotage is not compulsory but is advisable for vessels without local knowledge.

An aircraft approach area as shown on the chart lies in the S entrance to Takahama Seto. Mariners approaching Matsuyama Ko through this area should exercise caution, maintaining a

distance from the shore, depending on masthead height, at least as great as that given in the following table:

Distance offshore	Masthead height
400m	15m
800m	23m
1,200m	31m
1,600m	39m
2,000m	47m
2,500m	57m
2,950m	66m

Anchorage.—Anchorage can be obtained, in a depth of about 14.6m, sand, about 0.3 mile WNW of the head of the inner breakwater. In winter, when strong W winds blow, vessels find it best to anchor off Tomari.

A quarantine anchorage is situated 1 mile W of the root of the outer breakwater.

Islands in the South and Southwest Part of Aki Nada

9.8 **Gogo Shima** (33˚54'N., 132˚41'E.) lies 0.8 mile W of Shiraishi Bana and forms the W side of Shijushima Seto. The NW side of the island forms the S side of Tsurushima Kaikyo, and the SW side of the island forms the E side of Ko Seto.

The island is mostly hilly, with Ko Fuji, its conspicuous summit, located on the S side. The shores of Gogo Shima are very irregular, being indented and mostly fringed with reefs. Tsumuri Zaki, the NE extremity, shows a light.

Washigasu Wan, located on the W side of the island, affords good anchorage, in 11.9m, about 0.2 mile WNW of Kamose Shima, a small islet in the bay. The bay is sheltered from winds from the N through E to SE.

Yuraa Wan indents the E side of Gogo Shima and forms the W side of Shijushima Seto. The villages of Yura and Monda lie on the N side of the bay.

Tsuru Shima lies about 1 mile W of Washigasu Wan and forms the W side of Ko Seto. Shoal depths of 5.5m and less surround and lie within 0.1 mile of the shore on its NW side. A light is shown from the NW side of the island; a racon is located at the light.

Tsurushima Kaikyo (33˚56'N., 132˚39'E.) is the widest of a number of deep-water channels that connect Aki Nada and Iyo Nada. Its narrowest part has a least width of 1.5 miles and lies between Ho Zaki, the SE extremity of Muzuki-jima, and Kotohiki Han, the N end of Gogo Shima.

The depths in Tsurushima Kaikyo are deep and there are no known dangers on or close to the main charted track.

Nokutsuna-jima is located on the N side of the NE entrance to Tsurushima Kaikyo, about 2.5 miles N of Kotohiki Hana. The summit of the island is a bare hill of reddish-brown color. Shoal depths of 1.8 to 5.5m surround the island, and a depth of 12.8m lies 0.75 mile N of its N extremity. Tano Shima, a small islet, lies close off the NE extremity of Nokutsuna-jima. A light is shown from Ushigakuchi Hana, the SE extremity of the island.

Muzuki-jima (33˚58'N., 132˚40'E.) lies about 0.5 mile W of Nokutsuna-jima and forms the W side of Imoko Seto, the strait between the two islands. The village of Muzuki lies at the head of a bight on the S side of the island. Imoko Shima, a steep-to islet, lies midway between Muzuki-jima and Nokutsuna-jima, in Imoko Seto.

Anchorage.—Anchorage can be obtained off Tomari, opposite Takahama Ko, in a depth of 33m, about 0.3 mile offshore.

Naka-Jima

9.9 **Naka-Jima** (33˚58'N., 132˚37'E.), with its SE extremity lying close W of Muzuki-jima and are connected to each other by an overhead cable, with a clearance of 23.8m. The NW side of the island forms the E side of Kudako Suido, and the W side of the island forms the E side of Heyano Seto. The S coast lies N of the W entrance to Tsurushima Kaikyo.

Tobino Hana, a promontory, is located about the middle of the NW side of Naka-jima. A light is shown from a red tower on the breakwater head of a small harbor 0.4 mile S of Tobino Hana.

The island is mostly mountainous, with Osato Yama, its summit, rising in about the middle of the island. The coastline of Naka-jima is indented with coves and bays, most of which are shallow but are suitable as a refuge for small craft.

Uta Zaki, the N extremity of the island, shows a light, as does Shirono Hana, the SW extremity. Aka Saki, the S extremity of the island, forms the W side of a bight, suitable as an anchorage, with a depths of 11 to 16.5m.

Taka Shima is a small islet close off the S coast of Naka-jima; it forms the E end of the above-mentioned bight. The islet has two high points of nearly equal height and appears as two islets when observed from a distance. Tono Shima, a rocky islet, lies almost 0.5 mile SE of Taka Shima.

Fuguri Iwa, a black detached rock, 2m high, lies 0.5 mile SSE of Aka Saki. The top of the rock is white and conspicuous. The rock is marked on its SE side by a lighted beacon.

9.10 **Ai-jima** (34˚04'N., 132˚43'E.) lies 4 miles NE of Uta Zaki, the N extremity of Naka-jima. Shallow depths surround the island within 0.1 mile of the shore, which is fringed by reefs. A light is shown from the SE side of the island.

Temporary anchorage is afforded small vessels in the shallow bight which indents the S side of Ai-jima.

Ko-Ai-jima, a reef fringed islet, is densely wooded and lies about 1.3 miles SE of Ai-jima. Except for the S side, shoal depths lie within 0.15 mile of the islet's shore.

O-tateba-jima (34˚02'N., 132˚35'E.), 108m high and covered with brush, lies about 6.5 miles SW of Ai-jima. The island should not be approached within 0.1 mile, as it is fringed by shoals. Ko-tateba-jima lies about 0.3 mile NE of O-tateba-jima; the channel between the two islands is shoal.

Shira Ishi lies about 1.8 miles W of O-tateba-jima, and is comprised of three above-water rocks that lie on a reef. The W rock is 9m high and white. The reef runs N and S for about 0.3 mile, and a light is shown from the N rock.

Table of Contents

Kudako Suido

9.11 Kudako Suido (33˚59'N., 132˚35'E.), the strait lying between Naka-jima and Nuwa-jima, forms a deep-water channel that connects Aki Nada with Iyo Nada. Judako Shima, an islet, lies in the middle of the strait and shows a light.

Heyano Seto, the narrowest part of Kudako Suido, lies between Kudako Shima and Shirono Hana, the W extremity of Naka-jima.

The depths in Kudako Suido are deep, with the exception of Hokko Ku Iwa, with a depth of 1m lying about 0.5 mile SSW of Kudako Shima. Yoko Se, with a depth of about 14.6m, lies about 0.2 mile N of Hokkoku Iwa. The charted track through the straits is free of dangers.

Caution.—The traffic through Kudako Suido is very heavy and particular care is needed at its N and S entrances, where traffic meets from a number of directions.

Islands to the West and South of Kudako Suido

9.12 Nuwa-jima (33˚59'N., 132˚33'E.) lies about 1.3 miles W of Naka-jima; the E side of Nuwa-jima faces Kudako Suido and the W extremity of the island lies on the E side of Nuwashima Suido. The hills on Nuwa-jima are almost of equal height, thus making its summit hard to identify.

A light is shown from Kazakiri Hana, the NE extremity of Nuwa-jima; a lighted buoy is moored in the N approach to Nuwashima Suido, marking foul ground, close off the NW extremity of Nuwa-jima.

Tsuwaji Shima lies on the W side of Nuwashima Suido, with its NE extremity joined to the NW extremity of Nuwa-jima by an overhead cable, with a clearance of 40m. The village of Tsuwaji lies in a bight on the E side of the island; small vessels with local knowledge are afforded shelter in the bight. Abutatori Se, a small islet, lies close off the SE side of Tsuwaji Shima and is marked by a light.

Moro Shima (33˚57'N., 132˚30'E.), a round top island, thickly covered with coarse grass, lies 0.5 mile S off Tsuwaji Shima. The island forms the SE side of Moroshima Suido. Nenashi Sho, a small island, lies about 0.5 mile SE of Moro Shima and is marked by a light.

Futago Shima, consisting of two islets joined by a shoal, forms the N side of Futago Seto, which lies about 1 mile E of Nenashi Sho. The S side of Futago Seto is formed by Futagami-jima, about 1.3 miles S of Futago Shima. The islands of Yoko Shima, Naka Shima, and Koichi Shima lie in a NW-SE direction, about 2 miles SE of the E end of Futagami-jima. Koichi Shima, the S and highest island, shows a light from its SE end.

Kamose Shima (33˚55'N., 132˚32'E.), a small islet, lies about 0.5 mile S of the S coast of Futagami-jima. Kamoseno Okino is a steep-to detached rock, with a depth of 9.2m, lying about 0.3 mile S of Kamose Shima.

Nasake Shima forms the SW side of Moroshima Suido and is located about 0.3 mile W of Moro Shima. An overhead cable, with a vertical clearance of 39m, spans Kushigase Seto, from the S side of Nasake Shima to the NE extremity of Yashiro-jima.

Yashiro-Jima—North Coast—East Part

9.13 Between Setono Hana, the N point of the E end of Yashiro-jima, and Obatake Seto, at the W end of the island, the N coast of Yashiro-jima forms the S side of Hiroshima Wan.

Matsuga Hana (33˚57'N., 132˚26'E.) lies about 1.5 miles W of Setono Hana and is the reddish pointed extremity of the NE slope of Omi Yama. The point forms the W side of the entrance to a small bay. The village of Ihota stands at the head of the bay. The bay affords anchorage, in a depth of 11.9m, 0.1 mile abreast the village and is sheltered from S to W winds.

Zushi Saki is the E entrance point to a small bay and is located about 1.8 miles W of the village of Ihota. A shrine atop a wooded hill stands on the point; the village of Wada lies about 0.5 mile S of the point. Mistu Shima, an islet fringed by shoal water, lies almost 1 mile NW of Zushi Saki.

Matsuga Hana (33˚56'N., 132˚22'E.) lies about 1.8 miles WSW of Zushi Saki and should not be confused with the point of the same name previously discussed above this paragraph. Nabe Shima, a steep, thickly-wooded islet, lies about 0.2 mile NW of Matsuga Hana. The channel between the two is very narrow and should not be attempted without local knowledge.

Numerous islets lie between Matsuga Hana and Fu Saki, about 2.5 miles to the W. The shore between the two points is indented with small bays and coves, on which a number of small villages stand.

Anchorage.—Anchorage is afforded, in depths of 11 to 15.8m, 0.75 mile SE of Fu Saki.

Yashiro-Jima—North Coast—West Part

9.14 Osaki Hana (33˚57'N., 132˚17'E.) lies about 2.8 miles NW of Fu Saki and is the extremity of a mountain range. A sharp, thickly-wooded peak lies about 0.8 mile S of the point. A light is shown from Osaki Hana.

Kuka Wan is entered between Osaki Hana and Heburi Hana, about 2.5 miles to the W. The town of Kuka lies on the W side of the common mouth of two rivers that flow into the SE corner of the bay. A boat basin, protected by breakwaters, lies on the E side of Kuka. A light is shown from the head of the W breakwater. Anchorage for small vessels can be found, in a depth of 10.1m, 0.25 mile N of Kuka, except with winds between the NW and NE.

Heburi Shima (33˚58'N., 132˚14'E.), consisting of two small islets joined by a reef that dries, is located about 0.3 mile N of Heburi Hana. Passage between the S islet and Heburi Hana should not be attempted without local knowledge.

Between Heburi Hana and Myojin Hana, 2.5 miles to the W, lie two small bays separated by Tanoshiri Hana. The E bay is shallow and is the smaller of the two. Migama Wan, the W bay, has depths of 12.8 to 33m. A detached shoal, with a depth of 9.6m, lies in the middle of the bay. The village of Migama, protected by breakwaters, lies at the head of the bay. Vessels with local knowledge can obtain anchorage, in depths of 10 to 13m, sand. From October to April, there are seaweed beds at the inner end of the bay.

Obatake Seto

9.15 Obatake Seto (33˚57'N., 132˚11'E.) is the channel which leads between the NW coast of Yashiro-jima and the mainland coast of Honshu. Being the shortest route from Suo Nada and Iyo Nada to Hiroshima Wan, Obatake Seto is used heavily by large vessels. All vessels must navigate in accordance with the specified channels established under Maritime Traffic Safety Law.

The narrowest part of Obatake Seto, with a width of about 0.4 mile, lies between Myojin Hana, the NW extremity of Yashiro-jima, and Setoyama Hana, on the mainland of Honshu. A bridge, with a clearance of 24m, spans the strait between the two points.

Tides—Currents.—The tidal currents in the narrowest part of the strait attain a velocity of 7 knots at times. In the wider areas, the rate is between 2 to 3 knots.

Depths—Limitations.—Shoals and dangerous rocks on either side of the narrow part restrict the navigable width of the channel to about 0.2 mile, over depths of more than 10.1m.

Regulations.—Vessels navigating through Obatake Seto are requested to comply with the following cautionary items:

1. In order to prevent accidents, proceed through the strait as slow as practicable.
2. Vessels are not to overtake or steam alongside other vessels in the vicinity of the bridge.
3. As a great many fishing boats operate here, vessels should use precise caution to prevent accidents.

Directions.—The channe,l under the bridge is between Pier 3 and Pier 4, is marked on each side of the bridge by a fixed white light. Fixed green and red lights mark the N and S edges of the channel, respectively. A fog signal is sounded from Pier 4. The Maritime Safety Agency has designated routes for ships of 5 grt or more navigating through Obatake Seto, as indicated:

1. Line “A” is drawn from **Morisige Sake** (33˚56'52"N., 132˚12'08"E.), through Buoy No. 3 on a bearing of 341˚, to the opposite shore.
2. Line "B" is drawn by joining **Myojin Hana** (33˚57'07"N., 132˚11'26"E.) and **O Iso Light** (33˚57'03"N., 132˚10'47"E.), and the extremity of the right bank of the mouth of the Sikami Kawa, on the Honshu side of the strait.
3. Line "C" is drawn from Buoy No. 3 at line "A", through the middle of Pier 3 and Pier 4, to where it intersects with line "B." Line "C" is the middle of the channel on a bearing of 264.5˚.

The following transit regulations are in effect:

1. Westbound vessels from line "A" to line "B" shall navigate N of line "C," between Pier 3 and Pier 4. The vessel may pass midway between these piers should there be no oncoming traffic.
2. Eastbound vessels from line "B" to line "A" shall navigate S of line "C," and N of Kaizenzi Syo Buoy and then between Pier 3 and Pier 4, where the rule is the same as for westbound vessels.
3. Vessels are in no way to navigate between Myojin Hana and O Iso Light.

Yashiro-Jima—West Coast

9.16 Komatsu Ko (33˚56'N., 132˚11'E.) lies in a bight between Myojin Hana and Tsunaga Hana, about 1.5 miles to the SSW. The bight indents the N part of the W coast of Yashiro-jima to a distance of about 0.5 mile. At the head of the bight is a stone embankment enclosing salt pans, behind which lies the town of Komatsu.

Depths in the bight are over 10.1m in most places, except for Okinomo, which lies in the middle of the entrance to the bight. A lighted buoy is moored on the NE side of Okinomo.

Komatsu Ko is used as a refuge harbor and by vessels awaiting favorable tidal conditions to transit Obatake Seto.

Kasasa-jima lies in the S approach to Obatake Seto, about 1 mile W of Komatsu Ko. The whole island is thickly covered with trees and appears dark in color. It is fringed with a shoal bank that extends about 0.2 mile from its N side and about 0.2 mile from its S side.

Wakiga Hana (33˚55'N., 132˚10'E.), a prominent headland and an extremity of a mountain range, lies about 1.3 miles SSE of Kasasa-jima. A shoal, with a depth of 2.7m, lies about 0.2 mile WSW of the point.

Himi Saki (33˚53'N., 132˚11'E.), a prominent salient point, lies about 1.8 miles S of Wakiga Hana. The point is bare, with a reddish color, and backed by rolling hills. Hiko Shima, a small rocky islet, lies almost 0.8 mile SSE of Himi Sake. From the W, the three high points of the islet are conspicuous.

Tsunogi Saki lies 1.75 miles SSE of Himi Saki and forms the S entrance point to a bight. The bight consists of a sandy beach on which lie the villages of Tsunogi and Heta.

Obatake Seto—South Approach—West Side

9.17 The W side of the S approach to Obatake Seto is formed by Murotsu Hanto, a 7 mile long mountainous peninsula of the Honshu mainland coast, about 2.5 miles W of Yashiro-jima.

Yokozoe Hana (33˚51'N., 132˚10'E.) lies 2.25 miles WSW of Tsunogi Saki and forms the S point of a bight, protected from W and S winds. The village of Ainoura stands at the head of the bight. Kuro Saki, 1 mile NNW of Yokozoe Hana, forms the N point of the bight. A lighted buoy is moored about 0.8 mile NE of Kuro Saki.

Naga Saki is a red, rocky point about 2.5 miles NNW of Yokozoe Hana. A black rock that dries lies about 90m E of the point. The village of Atsuki lies on the shore of the bight on the N side of Naga Saki.

Karasu Shima (33˚55'N., 132˚08'E.) lies on a shoal 0.3 mile offshore, about 1.5 miles N of Naga Saki. A conspicuous white rock lies close off the NE extremity of the island. Aino Se, a detached rock with a depth of 1.8m, lies 0.15 mile SW of the S extremity of Karasu Shima.

Kuoshima Hana, a projection of the coast marked by black rocks and trees, appears as an islet and lies at the S end of Yanai Ko, about 1.3 miles NNW of Karasu-jima. A prominent chimney stands at Oda, about 0.4 mile NNW of Kuroshima Hana.

Table of Contents

9.18 Yanai Ko (33˚57'N., 132˚07'E.), a local harbor, includes the whole of a bight that lies between Kuroshima Hana and the coast 1.25 miles NE of Kuroshima Hana.

Tides—Currents.—The tidal rise at Yanai Ko is 3.1m at springs and 2.1m at neaps. Currents in the area attain a strength of 1 to 2 knots.

Depths—Limitations.—Depths in the greater part of Yanai Ko are shallow. Shoal water extends around Hadaka Shima. Within the line joining Hadaka Shima and Kuroshima Hana, the depths shoal quickly to less than 4.9m.

A dock about 0.2 mile N of Hadaka Shima has a depth of about 4.3m alongside; farther N is a quay with a depth of 4m alongside. There is a dolphin berth SW of Hadaka Shima with a depth of about 8.9m.

In the area approximately 0.5 mile SSW of Hadaka Shima there are dangerous rocks, including Koiketsugawano Su, with a minimum depth of 4.6m, Okino Iso and Jino Iso.

Aspect.—At the W end of Yanai Ko, a large industrial area and harbor facility have been constructed on reclaimed land. It is reported that oil and LNG berths, with depths of 14m alongside, are situated on the E side of the S end of the reclaimed land.

A power station chimney, gray in color with an elevation of 209m, stands about 0.4 mile NW of the LNG berth and is a conspicuous landmark. Red obstruction lights are shown at its top.

A detached breakwater extends from close NE of Hadaka Shima; a short breakwater extends W from the islet. A light is shown from the head of each breakwater. A lighted channel buoy is moored about 0.5 mile SE of the W breakwater light.

Obatake Ko, a local harbor, is located about 2 miles E of Yanai Ko. The harbor consists of a shallow boat basin with a small pier. Small vessels with local knowledge can find temporary anchorage close off the harbor.

Anchorage.—Anchorage, sheltered from all winds except from the E to S, is afforded, in depths of 17 to 18m, mud and sand, about 0.3 mile E of Hadaka Shima. Small vessels can obtain anchorage, in 3 to 9m, about midway between Hadaka Shima and the floating pier to the N of the islet.

Hiroshima Wan—South Part—Islands and Islets

9.19 Hotaka Shima (Hodaka Shima) (34˚04'N., 132˚24'E.) lies on the SE side of Hiroshima Wan and the NW side of the entrance to Hashirajima Suido. The island is thickly wooded and ringed with shoal water. Te Shima, a wooded islet, lies 0.75 mile S of Hotaka Shima.

Ha Shima lies about 1 mile SSW of Te Shima and is marked by two hills, the S hill being the higher. A village lies in the NW corner of a bight on the E side of the island. Nakanoko Shima, a small islet, lies between Ha Shima and Te Shima.

Hashira-jima (34˚01'N., 132˚25'E.), a dark, conical, and prominent island, lies about 1 mile SE of Ha Shima and is the largest island on the W side of Hashirajima Suido. A light is shown from the NE side of the island. Ko-hashira-jima, with two wooded summits, lies about 0.2 mile NE of the N extremity of Hashira-jima.

Tsuzuki Shima, Kottoi Shima, and Fukura Shima form a chain of islets that lies within 2 miles of the SE extremity of Hashira-jima. The islets are all wooded and fringed by reefs and rocks. Passage between the islets is not recommended without local knowledge.

O Zone (34˚01'N., 132˚20'E.), a steep-to rock with a depth of 4m, lies about 2.8 miles W of the S extremity of Ha Shima. Ise-ko Shima, an islet, lies about 0.3 mile S of O Zone. A beacon stands on the S extremity of the islet. Fish havens are situated to the N and W of the island.

Kuro Shima, lying about 1 mile S of Ise-ko Shima, is thickly wooded; when seen from the N it appears conical and is easily identified. Shingoro Shima, an islet, showing a beacon from its E end, lies 0.75 mile SE of Kuro Shima.

9.20 Kashira Shima (33˚58'N., 132˚21'E.) lies about 1 mile S of Shingoro Shima and has three dark wooded summits. Uka Shima, located close S of Kashima Shima, is separated from it by a shallow narrow channel spanned by an overhead cable, which has a vertical clearance of 9.2m.

Mae Shima (34˚00'N., 132˚16'E.), located about 3 miles W of Kuro Shima and about 4 miles NE of Obatake Seto, is divided into two parts by a narrow isthmus. Oban Yama is the summit on the N part; the hill on the S part has a pointed top.

Fuku Shima, a small islet with a rounded top, lies about 0.8 mile W of the S part of Mae Shima and almost 4 miles NE of Setoyama Hana.

Setoyama Hana (33˚58'N., 132˚11'E.) is 33m high and covered with pine trees. Red earth outcrops are prominent on a mountain behind the point. The point is at the N end of the Oshima Ohashi Bridge. See paragraph 9.15 for further information on the bridge.

Omodaka Hana lies about 7 miles N of Setoyama Hana, with several small villages and their basins between them. A greater part of this coast has a stone protective wall and drying sandbanks.

Iwakuni Ko (34˚11'N., 132˚15'E.)

World Port Index No. 61662

9.21 Iwankuni Ko, in general terms, refers to the harbor area, the limits of which are charted, between Omodaka Hana and the mouth of Oze Gawa. A U.S. Marine Corps Air Station, comprising an airport, piers, and berths, occupies the land area between Monzen Gawa and Imazu Gawa in the S part of Iwakuni Ko. The main part of the harbor lies NW, between Imazu Gawa and Oze Gawa. There are several seaweed cultivation grounds, some marked by a large number of buoys showing orange lights, in this area.

Winds—Weather.—Iwakuni Ko, frequently in the path of typhoons, has sustained a great deal of damage in the past. The harbor is mostly safe during N and W winds. Westerly winds prevail throughout most of the year. Seasonal temperatures are mild. Rainfall is heavy April through October.

Tides—Currents.—The current sets N and S at 0.5 knot full strength. The mean tidal rise at Iwakuni is 3.3m at springs and 2.5m at neaps.

Depths—Limitations.—There are five main cargo wharves 100 to 185m long. Vessels of up to 40,000 dwt, 200m in length, and 11.5m draft can be accommodated. There are three main oil wharves; tankers up to 150,000 dwt and 16.5m draft can be handled at the crude oil berth.

Aspect.—Several radio towers and numerous tanks and chimneys are conspicuous.

Pilotage.—Pilotage is not compulsory, but is available at the quarantine anchorage from 1 hour after sunrise to 1 hour before sunset, when required. Call "IWAKUNI-HO-AN" on VHF channels 12 and 16.

For further information, see paragraph 6.1

Anchorage.—The bay SW of the mouth of Monzen Gawa affords a good sheltered anchorage, in 10.1 to 15m, mud, during NW winds. The quarantine and repair anchorage is situated about 1.8 miles NE of the mouth of Imazu Kawa and is shown on the chart.

Anchorage berths are assigned by the pilot.

Caution.—A seadrome area, which is charted as a prohibited area, lies inside the harbor limits. The seaplane runways inside the seadrome are marked by special purpose lighted buoys.

Charted depths are reported to be unreliable in the Iwakuni harbor area E of Imazu Gawa and the airfield.

9.22 **Atada-jima** (34˚11'N., 132˚18'E.) lies on the E side of Iwakuni Ko. Except for an occasional sandy beach, the shore of the island is mainly cliffy and reef-fringed. The bights on the N and S sides of Atada-jima are suitable only for small vessels.

The islet of Inoko-jima lies close off the NE side of Atada-jima. A conspicuous white building stands on the S side of Inoko-jima.

Danna Se, a steep-to rock with a depth of 6.6m, lies 0.5 mile W of the W side of Atada-jima. Fish havens lie 0.1 to 0.3 mile S of the SE extremity of Atada-jima.

Kabuto-jima (34˚07'N., 132˚19'E.), about 4 miles S of Atada-jima, is composed of red soil. The pointed summit of Kabuto-jima is a good landmark.

Otake Ko (34˚14'N., 132˚14'E.), a local harbor, lies close N of Iwakuni Ko. The harbor is mostly calm. The smelting furnaces and the chimneys of an iron foundry are conspicuous; a number of other chimneys and stacks serve as landmarks.

Himeko-jima, a rock 13m high, stands on a shoal about 2 miles NW of Kabuto-jima. An isolated shoal, with a depth of 17m, lies 0.75 mile SE of the rock.

Caution.—A submarine pipeline and cable lie between Otake Ko and Atada-jima, and may best be seen on the chart.

9.23 Karakasa Yama, a good landmark with twin sharp peaks, stands about 4.8 miles NNW of the mouth of the Oze Gawa, the boundary between Iwakuni Ko and Otake Ko.

Itsuku Shima is a large, thickly wooded island extending NE from Otake Ko along the Honshu coast. The island has a rocky shore with some sand beach.

Ono Seto, the channel that leads between Itsuku Shima and the mainland shore, has a depth of about 7.3m and is narrowed by shoals to a width of about 0.1 mile near its central part. It is tortuous and navigation is very difficult, therefore, no attempt should be made to pass through without local knowledge.

Hijiri Zaki (34˚19'N., 132˚20'E.), the N extremity of Itsuku Shima, is fringed with rocks and shallow depths within about 0.2 mile of the point. A stone beacon stands close N of Hijiri Zaki.

Itsukushima Ko is a local harbor located on the N shore of Itsuku Shima, about 1 mile SW of Hijiri Zaki. A conspicuous shrine gate stands on a drying bank that fronts the shrine at the town of Itsukushima.

Anchorage.—Anchorage can be taken by small vessels, in about 7m, mud, about 0.5 mile WNW of the shrine gate.

Misen, the summit of the island about 2 miles S of Hijiri Zaki, attains an elevation of 529m.

The shore from the NE entrance of Ono Seto to Hiroshima, a distance of about 7 miles, is irregular and embanked with stone; along it are several towns and villages. The shore is mostly fringed with drying sandbanks.

Hatsukaichi Ko lies about 2.5 miles N of Hijiri Zaki. A radio tower, with red and white bands, is conspicuous on Kakunomae Hana, nearly 0.5 mile SSW of the entrance to Hatsukaichi Ko.

Ebiyamano Hana, an extremity of a small hill on the coast S of the town of Itsukaichi, is conspicuous with its gray appearance.

Hiroshima (34˚21'N., 132˚28'E.)

World Port Index No. 61650

9.24 Hiroshima consists of an open harbor with an anchorage, a port, and a city with facilities for berthing.

Winds—Weather.—Light N to NE winds predominate for most of the year. Storms are mostly from the WNW. Precipitation is greatest during the spring and summer seasons, with the highest amounts occurring during June and July.

The high terrain of the numerous islands and the surrounding coast shelter the harbor. High waves are experienced only during strong S winds.

Tides—Currents.—The tidal currents in the harbor are weak; they have little effect on vessels that are underway.

Depths—Limitations.—Designated fairways lead through the harbor and may best be seen on the chart.

At Hatsukaichi and Hiroshima, there are ten main wharves, 170 to 370m long, with depths of 10 to 12m alongside. Vessels of up to 30,000 dwt can be handled. In addition, there are several private wharves of 75 to 630m long with depths of 4 to 8m.

Aspect.—The shipyard at Hiroshima is conspicuous. **Kanawa-jima** (34˚20'N., 132˚29'E.) has pointed hills located in a N and S direction. The pointed summit of Kanawa-jima is located on the S part of the island. An overhead cable, with a vertical clearance of 47m, spans the channel between Hiroshima and the N end of Kanawa-jima. Another cable, with a vertical clearance of 49m, spans the channel between Kanawa-jima and the promontory close E of it.

Three submarine cables and a water pipeline are laid across this channel at its narrowest part, about 0.4 mile S of the overhead cable.

A main light is shown from the S extremity of **Ujina-jima** (34˚20'N., 132˚28'E.). Numerous red and green lights are shown off the coast about 0.3 mile NE of the main light. Two conspicuous television towers standing at an elevation of about 260m are situated 2 miles NE of the light structure.

Kaida Wan is located on the E side of the inner harbor; its entrance is spanned by the Hiroshima Bridge.

Table of Contents

Ujina-jima Light

Pilotage.—Pilotage is not compulsory, but without the aid of local knowledge, it is recommended. Pilots are available from sunrise until 2000 in the quarantine anchorage; VHF channel 16 is used.

For further information, see paragraph 6.1.

Signals.—Storm signals, local weather signals, and weather forecast signals are shown. The harbormaster can be reached via VHF.

Anchorage.—Anchorage can be taken in designated anchorages in suitable depths; the mud bottom, a mixture of clay and fine sand, affords good holding ground. Specified anchorages are designated by signals from the signal station.

Directions.—Large vessels approaching the port from the SW should pass through Miyazima Seto, W of Eno-jima and NW of Ko-Kakuma Sima, or through Nasabi Seto and Ozu (Osu) Seto.

Caution.—Several submarine pipelines and cables lie within the harbor limits and may best be seen on the chart.

Numerous small vessels and fishing boats may be encountered in the approach channels to the port.

9.25 Between **Kannon Zaki** (34˚19'N., 132˚30'E.), the point on the S limits of Hiroshima harbor, and Shibitono Hana, the point on the N limits of Kure harbor, the mainland coast on the E side of the N approach to Kure Ko is backed mostly by hills and mountains, which in places descend steeply to the shoreline.

Shallow depths, rocks and reefs, and mudflats fringe the coast to a distance of about 0.1 mile between Kannon Zaki and Shibitono Hana. Depths of 9.2 to 18.3m lie in places within about 0.5 mile of this stretch of coast.

Tengujo Yama rises about 0.5 mile inland of the coast and is conspicuous about 1.5 mile SE of Kannon Zaki. **Shishi Yama** (34˚15'N., 132˚31'E.), round topped and wooded, serves as a good landmark.

Between **Yataka Ishi** (34˚18'N., 132˚29'E.) and Koyo, about 3 miles SSE, the E coast of Eta-jima, which forms the W side of the approach to Kure Ko, is mainly cliffy and marked by steep slopes of a mountain range.

This coast is fringed by reefs in places but it is without dangers, in depths of 9.2m and greater, up to about 90m from shore. The outer part of a bank, with a depth of 14.6m, lies about 0.5 mile SE of the light tower on Yakata Ishi.

Kure Ko (34˚14'N., 132˚33'E.)

World Port Index No. 61640

9.26 Kure Ko consists of a port, a harbor with an anchorage and other facilities, and a city. Yosiura Wan, close N of Kure, is included in the harbor limits. Hiro Ko and Nigata Ko are considered as parts of the port of Kure.

Winds—Weather.—Normally the weather is mild and calm. Light NE and W winds predominate throughout the year. Storms are mostly from the W.

Kure Ko, surrounded by the high terrain of the mainland coast and adjacent islands, is sheltered from wind and sea during all seasons.

Tides—Currents.—Tidal currents within the harbor are negligible.

The tide rises about 3.5m at springs and 2.5m at neaps.

Depths—Limitations.—Showa Municipal Pier No. 1 is 150m long; it can accommodate vessels up to 15,000 dwt, with a maximum draft of 7m. Nishi-Kawaraishi Wharf is 260m long; it can accommodate vessels up to 4,000 dwt, with a maximum draft of 7m.

Nisshin Steel Mill No. 3 is 270m long and can accommodate vessels up to 276,000 dwt, with a draft of 17m.

Tokyo Pulp Comapny Dolphin Berth can accommodate vessels up to 42,000 dwt, with a draft of 9m.

Mitsukoshima Wharf is 192m long and can accommodate vessels up to 76,000 dwt, with drafts up to 16.5m.

At Etajima, on the W side of the harbor is Shinto Wharf, which is 190m long and can handle vessels up to 56,000 dwt, with a draft of 12m.

C.I. Oil Pier, which is 273m long and can handle vessels up to 125,000 dwt, with drafts up to 14m.

There are shipbuilding and repair facilities, with the largest being Drydock No. 3. It is 510m long and 80m wide; vessels of up to 800,000 dwt can be handled. Drydock No. 4 is 228m long, having a dwt capacity of 160,000, and a 17m depth.

Aspect.—O-urume-jima and Ko-urume-jima are conspicuous islets which lie on the shoal that extends about 0.5 mile SW from

the S entrance point of Yosiura Wan. The high cable towers, which stand on the islets, and the lighthouse and signal station of Ko-urume-jima are good landmarks. A shipyard at the head of Kure Ko is conspicuous. Mitugo Shima, about 2.5 miles S of Ko-urume-jima, is prominent from a distance.

Pilotage.—Pilotage is not compulsory, but is advisable for those without the aid of local knowledge. Inland sea pilots board 3 miles S of Sekisaki Lighthouse (approximately 33˚13'N., 131˚54'E.). Harbor/berthing pilots are available during daylight hours only and board vessels at the quarantine anchorage (approximately 34˚13'N., 132˚31'E.); VHF channels 16 and 12 are used. A pilot liaison office is situated at Kure. For further information, see paragraph 6.1.

Signals.—A signal station on Ko-urume-jima relays instructions from the harbormaster with reference to berthing and to the movement of vessels entering and departing the port. Vessels should retain onboard the most recent edition of Japan Maritime Safety Laws and Regulations, obtainable through the Japanese Coast Guard. This publication should be kept as a reference for signal station communiques and their meanings, appropriate answering signals, and other local or specific regulations. Radiotelephone may be used to contact the harbormaster.

Weather signals are shown from the station on Ko-urume-jima and from the roof of the harbor office on the E side of the mouth of Niko Gawa, about 1.5 miles E of Ko-Urume-jima.

Anchorage.—Kure Ko, with adequate depths, mud, good holding ground, lying close to the shore, affords an ideal anchorage for large vessels.

Anchorages and the use of mooring facilities are designated by means of signals transmitted from the signal station on Ko-urume-jima.

The quarantine anchorage, the limits of which are charted, lies W of the harbor entrance and is centered in a position about 0.8 mile SSW of the Ko-urume-jima.

Caution.—Numerous small fishing boats are prevalent along the final approach to Kure Ko.

9.27 Ondono Seto (34˚12'N., 132˚32'E.) is a narrow and shallow channel which lies between the N end of Kurahashi-jima and the mainland coast of Honshu. It is the shortest route leading into Hiroshima Ko from the E and is normally used by small vessels.

The navigable width of the channel is 60m, with a charted depth of 4.9m. The channel has strong tidal currents reaching a maximum of about 4 knots velocity. The vessel traffic in this channel is very heavy. There are many high-speed hydrofoils, ferries, rafts, and small vessels crossing this channel.

The Ondo Ohashi Bridge, with a vertical clearance of 23m, crosses the channel. The width of the channel under the bridge is about 60m. The bridge is painted red.

Regulations.—The lighted buoys moored in the N and S entrances indicate the center of the shipping route; vessels should leave the buoys to port. Speed should be as slow as possible. If oncoming traffic is met in the narrow channel, alter course to starboard so as to pass port to port.

Kannon Saki (34˚12'N., 132˚34'E.) is a point on the mainland coast about 1.5 miles E of Ondono Seto. A conspicuous hotel stands on the point.

9.28 Hiro Wan (34˚12'N., 132˚36'E.) indents the mainland coast of Honshu to the N between Shimoneko Zaki, a point on the N side of the W entrance of Neko Seto, and Kannon Zaki.

Hiro Ko, at the head of Hiro Wan, is a part of the port of Kure Ko.

Winds—Weather.—Hiro Wan, open to the S, is exposed to wind and sea from that direction. Strong winds and sea from the S cause heavy swells to enter the harbor, even after the wind subsides or changes direction.

Depths—Limitations.—The dredged channel, marked by range lights and lighted buoys, has a width of 150m and a charted depth of 8m. The Tokyo Pulp Company Dolphin Berth, with depths of 8.5 to 10m alongside, is situated close S of the front range light.

Extensive land reclamation was in progress on the W side of the channel. A detached breakwater extends off the SW end of the training wall on the W side of the mouth of Hirohigashi Okawa. A light is shown from the S end of this breakwater.

Aspect.—Two white chimneys of a paper mill stand on the E side of the mouth of the Hirohigashi Okawa. Radio towers stand close N of a wharf, situated about 0.2 mile NNE of Ishiga Hana, a point on the E side of the harbor, about 1 mile WNW of Shimoneko Zaki.

Anchorage.—Hiro Wan has good holding ground, with a bottom composed mostly of layers of clay. It affords good anchorage, except during strong S winds.

Hiroshima Wan—North Portion—Off-lying Islands, including Channels Between the Islands

9.29 Kurahashi-jima (34˚07'N., 132˚31'E.) is of considerable size, being about 7.5 miles long, N and S, and about 7 miles wide at its S end. There are two large bights, Okuno Uchi and Taino Uchi, on the E side. The depths in these bights are moderate. Rocks, below-water, lie in several places near the shore of Taino Uchi, the S bight.

Shoal water extends off the N side of the N entrance point of Okuno Uchi; on this shoal are two islets, the N being Koajiwa Shima and the S being Oajiwa Shima.

Oajiwa Shima, consisting of two islets, lies on the coastal bank 0.7 mile N of Oura Saki. A rock, which dries 0.2m, lies 183m E of the islets. Another dangerous rock, detached from the coastal bank lying about 0.2 mile NE of the drying rock, is marked by a lighted buoy moored close NW of it. There are oyster beds S of this rock and in Okuno Uchi.

Nasake Shima is located about 0.5 mile E of the entrance of Okuno Uchi. The island has conspicuous trees on the hillsides on its E side.

Kamegakubi (34˚07'N., 132˚36'E.), the E extremity of Kurahashi-jima, is prominent.

Karato Shima (34˚04'N., 132˚33'E.) is close S of the SE extremity of Kurahashi Shima and is separated from it only at HW.

Sengai, a rock that dries 1.7m, lies about 0.2 mile E of the E extremity of Karato Shima, and at about 0.6 mile S of this rock is Hiyama Dashi, with a swept depth of 10.1m. A swept depth of 11.3m, rocky, lies about 320m NE of Sengai.

Ka Shima, close SW of Karoto Shima, is 1.5 miles long, N and S. Three densely-wooded peaks are prominent on the S part of the island.

Table of Contents

Karato Koseto, the channel between Karato Shima and Ka Shima, is 0.15 mile wide, but as shoals project from both sides, the part between the 5.5m curve is only about 90m wide. It is spanned by a bridge with a vertical clearance of about 23m. Nakano Haye, dangerous rocks, lies about 0.1 mile offshore on the W side of the channel. At lowest LW, rocky heads are visible, drying to a maximum height of 1.3m. Local knowledge is necessary for this channel.

Ha Shima, a small islet, lies about 0.5 mile S of the SW extremity of Ka Shima. Three rocks form a chain in the vicinity of its N point, and shoal water extends off for about 0.1 mile from its S extremity. Manaita Se, a detached shoal which dries about 0.6m, lies about 0.6 mile E of Ha Shima. It is usually difficult to make out.

The S side of Kurahashi Shima forms a large bay, with depths of about 14.6 to 21.9m, mud bottom. Torii Dashi, a rocky shoal covered by about 8.2m, lies at about the middle of the entrance to the bay and 1 mile W of the N end of Ka Shima. About 0.1 mile W of this shoal, there is a submerged rock with a depth of about 13.2m. The head of the bay is divided into several bights.

9.30 Yamaura Take (34˚06'N., 132˚28'E.), on the SW part of Kurahashi Shima, has a blunt summit from which a ridge descends gradually to the NE.

Zyogesi Hana, the SW extremity of Kurahashi Shima, is cliffy; outcrops of rocks and stones make it easy to recognize from a distance.

Yoko Shima is the S of a group of rocky shoals and islets extending nearly 3 miles NW. Tsuzuki Shima consists of several rocks that extend from the middle of the NW side of Yoko Shima for a distance of about 0.6 mile in a NW direction. The highest rock is about 31m high and shows three rounded summits which resemble islets from a distance. Ukiikada, a rock which dries, lies about 0.3 mile NW of the above rock.

Kashinoko-jima, a small islet 21m high to the treetops, lies about 0.7 mile NW of the highest rock on Tsuzuki Shima. A ledge of drying rocks extends 0.2 mile N from it. A reef extends S from the S end of the islet and dries for a distance of about 90m offshore; about 140m offshore there is a 0.9m depth, beyond which the depths increase rapidly.

Kuro Shima, 1.25 miles NW of Yoko Shima, is about 72m high and wooded. A sandspit projects from its SE side. Ebigahire, a patch of drying rocks, lies about 0.4 mile W of Kuro Shima. The highest rock dries 2.7m. O Goban, a rock which dries about 0.3m, lies about 0.6 mile NW of Ebigahire.

Dentaro Hana (34˚06'N., 132˚27'E.), the W extremity of Kurahashi Shima, is difficult to distinguish W, but its summit is dark and rounded. A light is shown from a round concrete tower standing on the point.

9.31 Hayase Seto (34˚09'N., 132˚30'E.) is the channel that leads between Kurahashi Shima and Higasinomi Shima, and then to Kure.

Tides—Currents.—Strong tidal currents flow through the narrow part of the channel at velocities of 3 to 4 knots.

Fish havens exist on the E side of the channel.

Depths—Limitations.—The W entrance of Hayase Seto, between Dentaro Hana and Oyake Hana, the S extremity of Higasi-nomi Shima, is wide and deep, as in the channel along the S side of Higasi-nomi Shima. The narrowest part of Hayase Seto has a navigable width of about 90m between the 5m curves and about 46m between the 10m curves.

Aspect.—Hiki Shima, an islet, presents a dark brown to yellowish aspect on the W side of the N entrance of Hayase Seto; the islet lies about 1.8 miles SW of **Mitugo Shima** (34˚12'N., 132˚31'E.).

Matsuga Hana (34˚10'N., 132˚29'E.), a narrow headland, lies about 0.3 mile WNW of the N end of Hiki Shima. A short detached breakwater is situated 0.1 mile WNW of Matsuga Hana; a light is shown from its W end. Numerous oil tanks mark the coast about 1.3 miles NNE of Matsuga Hana.

Eboshi Iwa, a wedge-shaped rock, 8.5m high, lies on the N side of the W entrance of Hayase Seto in a position about 200m W of Oyake Hana.

Caution.—Hayase Seto should not be attempted without local knowledge.

9.32 Higasi-nomi Shima, Nisi-nomi Shima, and Eta Shima appear to be separate islands but are actually one large island about 10 miles long, N and S. The S part of the island is named Higasi-nomi Shima, the NW section is Nisi-nomi Shima, and the N is Eta Shima. The summit of the island stands on the S part, in a central position; its ridge slopes gradually SW forming the long and narrow point named Oyake Hana.

Yakata Ishi lies on the extremity of a reef which extends about 0.2 mile N from a low tongue of land which forms the NE end of Eta Shima. A light is shown from Yakata Ishi and is a good mark when entering Kure Ko.

Kirikushi Wan, close W of Yakata Ishi, affords anchorage to small vessels, in a depth of 13m.

Naga Shima, about 0.5 mile W of Oyake Hana, is fringed with shallow rocks. A drying sandspit extends about 200m NNE from the NE extremity of the island. A breakwater extends from the N coast. Aino Iso, two rock heads with a depth of 1.9 and 0.9m, lie between Naga Shima and Oyake Hana.

Okino Shima (34˚09'N., 132˚26'E.), an island with three wooded hills, lies 1 mile N of Oyake Hana. The SW hill is the summit of the island. Conspicuous light brown cliffs mark the W extremity of Okino Shima.

Akabane Saki, about 0.5 mile NNE of the N extremity of Okino Shima, is a round bluff headland. The town of Fukae stands at the head of a cove on the S side of Akabane Saki.

9.33 Kanokawa Uchi (34˚11'N., 132˚26'E.) indents the S part of Nisi-nomi Shima to the N for about 1.5 miles. The entrance of Kanokawa Uchi lies between Akabane Saki and Oya Bana, the S extremity of Nisi-nomi Shima, about 0.8 mile WNW of Akabane Saki. Numerous prominent oil tanks stand on the W shore of Kanokawa Uchi. Kanokawa Uchi has depths of 10.1 to 16m, mud bottom, over its width of about 0.5 mile.

Shindo Yama, 287m high, a conspicuous, conical hill, stands about 2.3 miles NNE of Oya Bana; it serves as a good landmark for vessels entering Kanokawa Uchi from the area between Okino Shima and O-kurokami Shima.

Anchorage.—Kanokawa Uchi provides a good anchorage, mud, in 12 to 15m. It is sheltered from heavy seas even during SW winds. Vessels arriving off the harbor entrance at night can take temporary anchorages SW of Naga Shima or S of O-Kurokami Shima.

9.34 Kanokawa Ko (34˚11'N., 132˚27'E.) (World Port Index No. 61655) consists of an oil terminal that lies on the W side of Kanokawa Uchi, about 0.8 mile NNE of Oya Bana.

Depths—Limitations.—There are two main oil berths. Berth No. 1 can accommodate tankers up to 30,000 dwt, 240m in length, and 11.2m draft; Berth No. 3 can accommodate tankers up to 125,000 dwt, 270m in length, and 14m draft.

Berth Nos. 2 and 4 have depths alongside of 7.5m and are used for coastal tankers, using only 5,000 dwt.

Pilotage.—Pilotage is not compulsory. Berthing occurs during daylight hours only. Pilots are available at the quarantine anchorage of Iwakuni. Inland sea pilots are available at Seki-saki or Wada Misaki; VHF channel 16 is used. For further information, see paragraph 6.1.

The E side of the fairway leading to Kanokawa Oil Terminal is marked by a line joining Lighted Buoy No. 2 , moored 0.4 mile SSE of Oya Hana, and Lighted Buoy No. 4, moored 0.8 mile NE of the point. A lighted buoy is moored 183m E of Oya Hana and marks the W side of the fairway.

Regulations.—Quarantine and customs are handled by officials from Kure.

9.35 O-kurokami Shima (34˚10'N., 132˚24'E.) lies about 1 mile SW of Oya Bana. Three small bights indent the N side of O-kurokami Shima. The island is conspicuous, with its dark appearance being in contrast with the red terrain of the nearby islands. The S and W sides of the island are cliffy.

Umaga Se, a circular group of rocks, awash at LW, lie about 0.6 mile WSW of the NW extremity of O-kurokami Shima. About 0.1 mile NW, there are rocks with a depth of 10.9m.

Sira Isi, comprised of two white rocks in a N and S direction, lies about 1.8 miles W of the NW extremity of O-kurokami Shima.

Mitsuke Ishi, a rocky patch with a depth of 1.3m, lies about 1.3 miles ENE of the NW extremity of O-Kurokami Shima. Ikada Ishi, with a depth of 2.7m, lies about 1 mile S of Mitsuke Ishi. These hazards lie in the channel between O-Kurokami Shima and Nisi-nomi Shima. It is dangerous to use this channel without local knowledge.

Between Oya Bana and Ganneno Hana, about 6 miles NNW of Oya Bana, the W coast of Nisi-nomi Shima presents a monotonous shoreline broken only by Iruka Hana. South of Iruka Hana, the shore is mostly a sandy beach while to the N of the point it is rocky; several villages stand on this coast.

A white, round pillar stands on the W side of **Iruka Hana** (34˚14'N., 132˚23'E.). **Notoro Yama** (34˚13'N., 132˚25'E.), the prominent summit of Nisi-nomi Shima rises to a height of 542m and is located 2 miles ESE of Iruka Hana.

Ko-kurokami Shima, a dark, conical and densely-wooded islet, lies about 1.5 miles WNW of Iruka Hana. A white round pillar stands close to the N extremity. Manaita Ishi, a rocky shoal about 0.1 mile long, lies about 0.6 mile NNE of Ko-Kurokami Shima. The E rock dries about 1.2m and the W rock is awash.

From **Ganneno Hana** (34˚16'N., 132˚23'E.) to the entrance of Eta Uchi, about 2.5 miles E of Ganneno Hana, numerous rafts lie along the N coast of Nisi-nomi Shima. The villages of Mino, Koso, and Miyoshi, with a number of basins and small breakwaters, mark this coast. Numerous rocks and shoals lie along this stretch of coast.

9.36 O-Nasami-jima (O-Nasabi-jima) (34˚16'N., 132˚22'E.) lies about 0.5 mile N of Ganneno Hana. Two hills mark the above island; the E hill is the summit and is marked by surface cutting. Nakano Se, a rock 2.1m high and marked by a lighted beacon, lies about 0.2 mile S of the E end of O-Nasami-jima. Numerous oyster rafts lie near the N shore of O-nasami-jima.

Eno Jima, an islet 39m high, lies about 1 mile N of the W end of O-Nasami-jima. A light is shown from the islet; numerous oyster beds lie to the SE of the islet.

Miyazima Seto is the channel lying W of O-Nasami-jima; it is divided into two channels by Eno Jima. Nasabi Seto is the channel lying S of O-Nasami-jima; it is deep and free of dangers.

Ando Shima, an islet 11m high, lies about 1.5 miles ENE of Ganneno Hana. Vessels should pass N of Ando Shima. A light is shown from this islet. Numerous obstructions, best seen on the chart, lie SE, SW, and W, respectively, of Ando Shima.

Eta Uchi (34˚15'N., 132˚26'E.), between Nisi-Nomi Shima and Eta Shima, is almost landlocked except for Tsukumo Seto, the entrance channel, which is narrow and has adequate depths and a width of about 0.3 mile. Eta Uchi has depths of 9 to 18m, mud, within about 0.2 mile of the shore, except for a rocky patch with a depth of 9.8m which lies in the E part of the harbor. The chimney which stands in the middle of the S side of the bay provides a good mark while entering the bay. Several radio towers and buildings stand on the E side of the bay.

Caution.—Oyster beds extend up to 0.5 mile offshore on the W side of Eta Uchi, between Tsukumo Seto and Matsuga Hana. Vessels should proceed at moderate speed to avoid disturbing the beds.

9.37 Ozu Seto (34˚17'N., 132˚26'E.) is a deep channel between the N coast of Eta Shima and the S shore of Nino Shima. It is the main route to Kure Ko and the route recommended for large vessels approaching Hiroshima Ko. The narrowest part of Ozu Seto has a navigable width of about 0.4 mile between Shinoki Hana, a cliffy point on the N side of the NW end of Eta Shima, and Gaibono Hana, the SE extremity of Nino Shima.

Nino Shima (34˚18'N., 132˚26'E.) is a large hilly island that lies about 0.8 mile N of Hana Guri, the NW extremity of Eta Shima. Aki-ko Fuji, the summit of Nino Shima, is located on the N part of the island. Topped by a white staff, Aki-ko Fuji is a good landmark. Oikada Hana, the cliffy N end of Nino Shima, is the termination of the steep N slope of Aki-ko Fuji. The S coast has exposed rock and many cliffs.

Dogen Ishi is a submerged rock with a depth of 2.7m, about 0.6 mile NE of Gaibono Hana. A lighted beacon stands on Dogen Ishi. A dangerous reef extends about 0.2 mile SE of Gaibano Hana. Misen Dashi, a submerged rock with a depth of 9.5m, lies about 0.6 mile E of Dogen Ishi. Fishing banks lie about 250m NNW and close SW of Misen Dashi. A rock, with a depth of 10.1m, lies about 0.2 mile NNE of Misen Dashi. Suno Ishi, with a depth of 11m, lies on the S side of the channel, about 1 mile SSE of Misen Dashi.

Ko-kakuma Shima (34˚19'N., 132˚24'E.) is a small island with a few cliffs. O-kakuma Shima lies about 400m S of Ko-kakuma Shima and is joined to it by reefs and shoals. There are some houses on its summit. Several fishing reefs, best seen on the chart, lie close to these islands.